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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,472	02/19/2002	Maitreyee Mahajani	40025-005	6706

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EXAMINER

LE, THAO X

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 06/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/079,472

Applicant(s)

MAHAJANI ET AL.

Examiner

Thao X Le

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claim 1, 3-7, 9-19, 23-26 are rejected under 35 U.S.C. 102(e) as being anticipated by US Pub 2002/0039822 to Kusumi et al.

Regarding to claim 1, 23, 25, Kusumi discloses a method for making a thin film transistor (embodiment 12 fig. 53-54H), containing a gate dielectric structure 36, fig. 54E comprising: providing an oxide layer 31b of the gate oxide structure on the substrate 21 by an in-situ steam generation (ISSG) process, [0210 and 0528].

Regarding to claim 3, Kusumi discloses a method wherein a thin film transistor is a floating gate 15 [paragraph 0142] transistor.

Regarding to claim 4-7, Kusumi discloses a method for making a thin film transistor wherein the ISSG process flows hydrogen and oxygen over the substrate, at a temperature ranging from about 900 to about 1100 °C, at a pressure ranging from 1000 Pa to 2000 Pa (7.5 – 15 Torr), and having a thickness of 50 to 150 angstrom (5 nm to 15 nm) [0528].

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Regarding to claims 9-19, 24, 26 as discussed in claims 1, 3-7, Kusumi discloses all the limitation of claims 9-19 including providing a nitride layer 35 on the oxide layer, and providing a second oxide layer 51 on the nitride layer [0529] fig.54C, and ONO structure [0534].

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2, 8, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pub 2002/0039822 to Kusumi et al., and further in view of US Patent 6,362,085 to Yu et al.

Regarding to claim 2, Kusumi discloses the substrate comprises a gate conductor 13 fig. 53 [0142] on a semiconductor substrate 21. But Kusumi does not disclose the glass substrate. At the time of the invention was made; it would have been obvious to one of ordinary skill in the art to use the teaching of Kusumi to form the device on the glass substrate, because the glass substrate is well known in the art.

Regarding to claim 8, 20-22 Kusumi discloses a method for making a thin film transistor comprising substrate 21, oxide layer 31b of a gate dielectric structure on the substrate by an ISSG, having thickness of 50 to 150 angstrom (5 nm to 15 nm), temperature ranging from about 900 to about 1100 °C, at a pressure ranging from 1000 Pa to 2000 Pa (7.5 – 15 Torr) [0528]. But Kusumi does not disclose annealing the oxide

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layer in a nitric oxide atmosphere. However, Yu reference discloses the annealing the oxide layer in the nitric oxide atmosphere. At the time of the invention was made; it would have been obvious to one of ordinary skill in the art to combine the teaching of Yu with Kusumi, because it would have increased the dielectric constant and improved the hot carrier hardness of the oxide layer, column 1 line 49-58.

### *Conclusion*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) US Patent 6,171,911 to Yu

b) US Patent 6,184,155 to Yu et al.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is 703-306-0208. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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Thao X. Le  
May 24, 2002



**PHAT X. CAO**  
**PRIMARY EXAMINER**